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VARIATION IN AMOUNT OF DIFFERENT KINDS OF MEDICAL CARE RECEIVED

BY RESIDENTS IN RURAL AND URBAN COMMUNITIES

Using tables and charts selected from various sources

by

Jesse B. Yaukey, Statistician, Office of the Chief Medical Officer,  
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Much attention has been given recently to the proportionately small amount of medical care which is received by low income groups. Evidence is available to show that residence in a rural area constitutes almost as great a deterrent on the receipt of medical care as does low income. The group which suffers most from the lack of medical care, therefore, is the low income farmer group, and the importance of any movement to deal with the medical care problem among this group consequently must be estimated in the light of the fact that it is making medical care available to the group most lacking such care in our whole population, when divided along the lines indicated above.

An effort is made here to bring together from a number of sources, excerpts and tables showing the variations in amount of medical care received by persons living in rural and urban areas and in a number of instances the variation produced by the combined influence of income and rural or urban residence. As is apparent from the notes indicating sources of quotations and tables, practically all of this material is taken from already published studies, and opportunity is taken here to express appreciation to Dr. Selwyn D. Collins of the United States Public Health Service and others who have kindly permitted the use of their material for this purpose. Sources from which charts and tables are taken are listed at the end of the paper.

Physicians' Calls

In point of importance among the different kinds of medical care available for rural people, the general practitioner services of the physician are by all odds foremost. This is also true elsewhere but not to the same extent that it is among country folk. For them the lack of hospital or dental services is to a certain extent condoned and the physician is counted upon to somehow make up for what is lost through the lack of these other facilities. However, Table 1 shows that people living in towns under 5,000 in population and rural areas consistently receive a smaller amount of any kind of service from any kind of doctor than people living in medium sized or large cities. Office and clinic calls by medical doctors and specialists average 175 per hundred persons, which is about 70 percent of the 242 calls per hundred persons received by folks in large cities. The rates for home calls - 83 and 119 - also show a seven to ten ratio for rural and small town areas as compared with large cities. That this is not due to a smaller amount of illness in rural areas is shown by the fact that 85 illnesses per hundred persons per year were reported for rural areas as against 80 illnesses per hundred persons for large cities.







(1) Table 1 - Services of physicians and other practitioners in connection with illness in cities of different sizes - 7,434 canvassed white families in 14 states, 1928-31

Type of rate	Annual rates per 100 population			
	All groups	Cities 100,000 and over	Cities 5,000 - 100,000	Towns under 5,000 and rural
Total illnesses(a) per 100 population	83	80	85	85
Calls(b) per 100 population				
Calls by any practitioner	264	300	268	224
Calls by all private physicians and specialists	213	242	223	175
Home calls by private general physicians	106	119	117	83
Clinic calls(b)	31	36	25	33
Calls by nonmedical practitioners	20	22	20	17
Calls by all practitioners per total case	3.2	3.8	3.2	2.6
Population under observation	32686	11593	8550	12543

(a) All illness, both attended and not attended by doctors.

(b) Calls in connection with illness except that clinic care includes also calls for immunization, well-baby care, and health (including school) examination.

These rates shown in Table 1 for physicians' and other practitioners' services do not take income into account. In Table 2 is shown the percentage of illness disabling for seven days or longer which receives doctor's care. For cities of 25,000 and under, this figure is 73 percent for the lowest income non-relief group, and for small town and rural areas it is doubtless lower than that. This compares with 77 percent of this type of illness in medium sized cities and 80 percent in large cities which receive doctor's care among this same income group.

(2) Table 2 - Percentage of disabling illnesses receiving doctor's care, by economic status and size of city. Urban, white.\*

Annual family income and relief status	Size of city			
	All sizes	100,000 and over	25,000 to 100,000	Under 25,000
All incomes	81	83	79	75
Relief	78	81	76	70
Nonrelief				
Under \$1000	78	80	77	73
\$1000 to \$2000	82	83	81	77
\$2000 to \$3000	85	87	83	81
\$3000 to \$5000	87	88	86	82
\$5000 and over	89	90	87	87
Total Number of Illnesses				
All incomes	367,257	252,205	55,810	59,242
Relief	85,029	58,246	13,307	13,476
Nonrelief				
Under \$1000	82,986	50,632	15,055	17,299
\$1000 to \$2000	136,114	96,258	19,435	20,421
\$2000 to \$3000	40,057	29,637	5,007	5,413
\$3000 to \$5000	15,838	11,793	2,071	1,974
\$5000 and over	7,233	5,639	935	659

\*See footnotes (a) through (e), Table (3)







Table 3 shows the percentage of disabling illnesses in towns and villages and rural areas in certain selected counties which received doctor's care and also the percentages which received hospital or nursing care. In the three Missouri counties listed, only 55 and 59 percent of these illnesses which disabled the patient for seven days or longer received doctor's care. These figures represent all income groups for these counties but only one group - the 16 Georgia counties - received more doctor's care than the 73 percent shown for the low income group in cities of 25,000 and under in Table 2.

(3) Table 3 - Percentage of disabling illnesses (a) receiving various types of medical care. Rural, white.

Community	Doctor (b)		(d) Hos- pi- tal	Nursing		Total Number of Ill- nesses
	To- tal	Exclusive of Hospi- tal Care		(e) Pri- vate Duty	Vis- it- ing	
<u>Towns and villages</u>						
<u>under 2,500 population</u>						
Georgia (16 counties)	79	78	10.8	4.0	2.81	1496
Michigan Counties						
Hillsdale	83	80	17.2	3.7	1.69	1121
Crawford, Otsego, Roscommon	80	78	16.1	10.3	9.07	915
Missouri Counties						
Livingstone, Linn	65	64	7.6	1.5	1.38	1381
Howell	75	73	12.5	2.9	1.46	481
<u>Purely rural</u>						
Georgia (16 counties)	77	76	8.5	3.0	2.62	4459
Michigan Counties						
Hillsdale	73	70	12.3	4.3	1.69	4139
Crawford, Otsego, Roscommon	70	67	15.5	5.8	4.97	1248
Missouri Counties						
Livingstone, Linn	55	54	5.7	1.2	0.63	5058
Howell	59	55	7.8	1.8	0.52	3091

- (a) Disabling for 7 consecutive days or longer during the 12 months immediately preceding the visit, exclusive of cases in hospital for the entire period. Hospital cases, confinements, and fatal cases which disabled for less than 7 days are included.
- (b) The term doctor refers to physicians and a relatively small number of other practitioners.
- (c) Comprises cases treated by doctor at home, in the doctor's office, or in a clinic or outpatient department of a hospital.
- (d) Hospital care refers solely to inpatient care. Cases in hospital for the entire 12 months preceding the visit are excluded. Hospital cases which disabled for less than 7 days are included.
- (e) Exclusive of floor duty nursing service in the hospital.

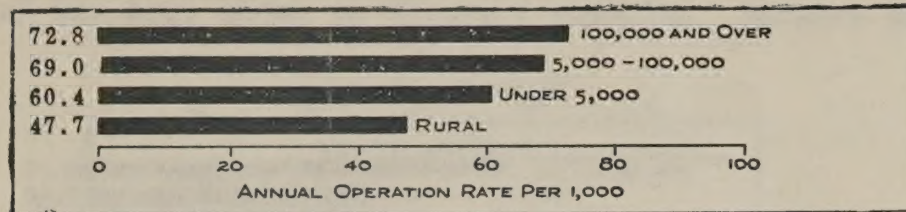




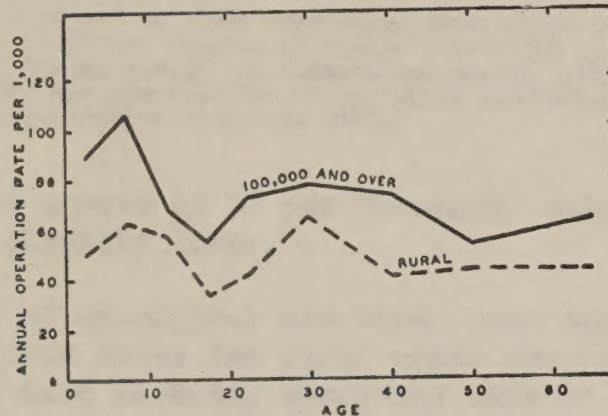


## Surgery

When consideration is limited to the specific type of physicians' service which comes under the head of surgery, we have available data for purely rural groups excluding the small town groups with which they were combined in Tables 1 and 2. These data show (Figure 1) an operation rate of 48 per thousand

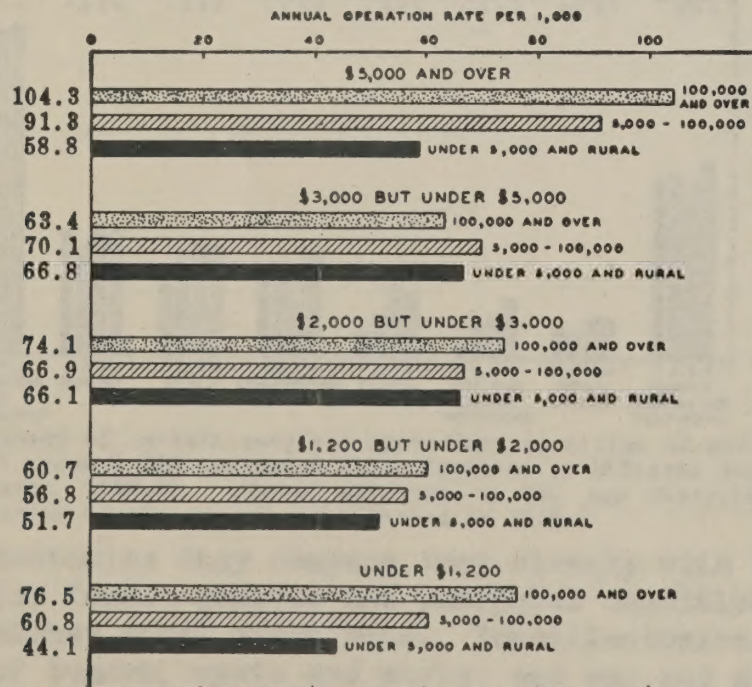


(4) Figure 1. - Frequency of all surgical operations in cities of different sizes and in rural areas-8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population of the registration States in 1930.)



(5) Figure 2. - Frequency of all surgical operations among persons of specific ages in large cities and in rural areas-8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31.

among rural folk as compared with 73 per thousand in cities of 100,000 and over, and Figure 2 indicates that this difference applies rather consistently for all ages. Figure 3 shows the combined influence of income and rural or urban residence. For this purpose rural folk have again been grouped with towns under 5,000 in population, but notwithstanding this the operation rate



(6) Figure 3. - Frequency of all surgical operations in cities of different sizes among persons classified according to total annual family income - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population of the registration States in 1930.)

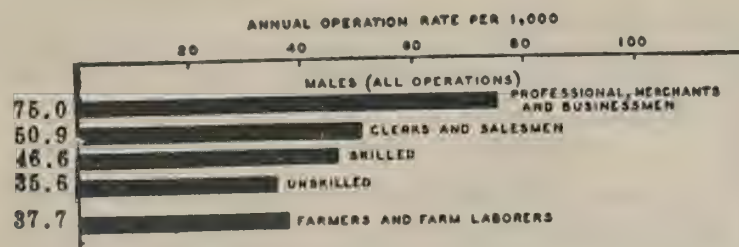






for the low income rural resident is further reduced from 48 per thousand for the whole rural group to 44 per thousand for those with incomes under \$1,200 per year.

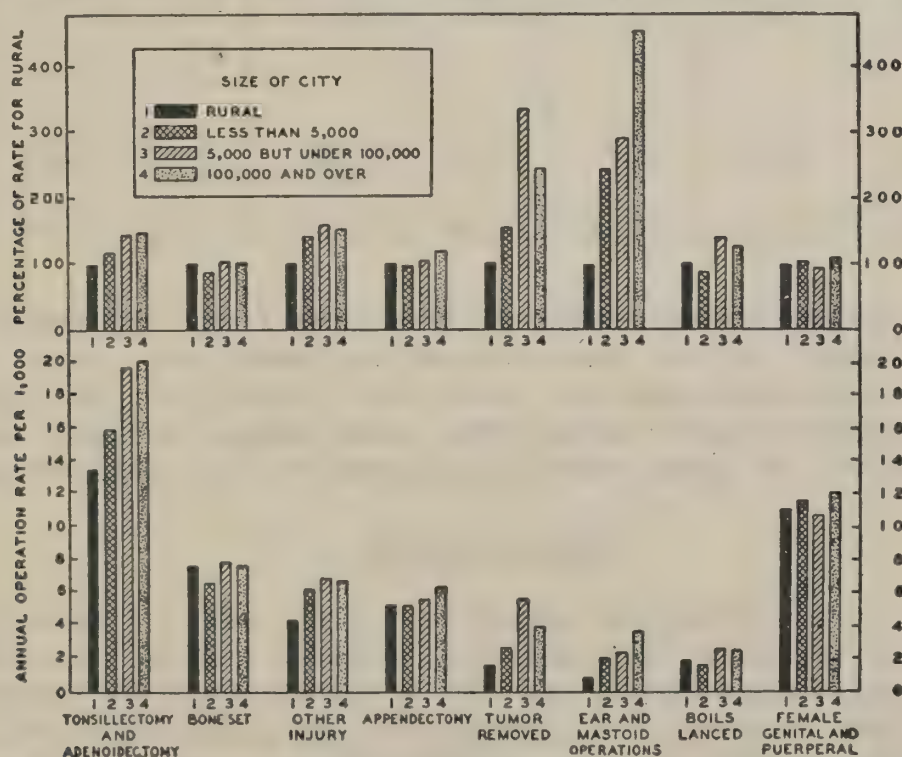
When these same rates are examined for men on the basis of occupation, a classification of the sort shown in Figure 4 results. Farmers and farm



(7) Figure 4. - Frequency of all surgical operations among males 15-64 years of age engaged in different classes of occupations-8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population 15-64 years of age in the registration States in 1930.)

laborers are found to have a rate of 38 per thousand, only the rate for unskilled laborers being slightly lower.

When different kinds of operations are taken into account (Figure 5), it is apparent that while the rates for rural areas are in almost every instance the lowest, in the more severely emergency type of case such as



(8) Figure 5. - Frequency of certain surgical operations in cities of different sizes and in rural areas-8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population of the registration States in 1930.)

fractures or appendectomies they compare very closely with the rates for cities. The rate for female genital and puerperal conditions may be affected by the relatively higher rural birth rate. Tonsillectomies, operations for injuries, removal of tumors, cysts and warts, and ear and mastoid operations are the types of operation for which the rural rate falls farthest below that for cities, and all of these operations are likely to be more or less elective







in nature though the bad and often disastrous results of failure to operate, where a tonsillectomy is needed or an injury requires an operation for satisfactory recovery are very well known. Table 4 shows the combined effect of

(9) Table 4 - Frequency of certain surgical operations among canvassed white families of different annual incomes in metropolitan, urban, and rural parts of 18 states during 12 consecutive months, 1928-31

Nature of Operation	Cities of 100,000 or over			Cities of 5,000-100,000			Towns under 5,000 and rural areas		
	\$3,000 and over	\$2,000 but under \$3,000	Under \$2,000	\$3,000 and over	\$2,000 but under \$3,000	Under \$2,000	\$3,000 and over	\$2,000 but under \$3,000	Under \$2,000
Annual operation rate per 1,000 population (age adjusted)									
All operations -	83.8	74.1	62.9	82.1	66.9	58.0	64.6	66.1	48.8
Tonsillectomy and adenoidectomy	25.1	18.8	17.8	26.2	18.2	15.6	19.4	14.6	13.9
Ear and mastoid operations	6.1	2.6	2.7	3.2	2.3	1.9	2.5	1.4	1.2
Appendectomy	6.8	8.1	4.4	7.3	5.7	4.0	7.2	6.9	4.2
Lancing of boil or abscess	3.0	2.4	1.8	4.4	2.0	1.7	-	4.4	1.2
Removal of tumors (except of the female genital organs)	5.9	4.9	1.3	7.8	6.5	2.5	3.0	4.2	1.3
Operations on the female genital organs (per 1,000 females)	10.7	13.3	12.1	10.2	9.2	10.8	6.7	14.7	11.1
Operations on injuries	15.2	15.1	13.2	12.1	14.5	16.7	13.1	13.0	12.0

income and urban and rural residence on rates for different kinds of surgical operations. Again the lowest rates are shown for low income rural residents in all except two categories. The rates for appendectomies and for operations on the female genital organs among low income rural residents is slightly higher than that for the corresponding income group in the medium sized city.

#### Hospital Care

Only limited information is available on hospital care in communities of different sizes. Table 5 shows hospitalization rates for rural areas and cities of different sizes based on (1) the entire population of the area, (2) all reported illnesses and (3) disabling illnesses. Whatever the basis of estimate the lowest rates consistently prevail in the rural areas. The rate of 42 hospitalized cases per thousand persons for rural areas is 60 percent of the rate of 71 cases shown for large cities. When percentages of illnesses hospitalized are compared, it is found that the rate for rural areas of 5.4 per hundred for all reported cases is 61 percent of 8.8 per hundred, the rate for large cities, and 9 per hundred for disabling illnesses in rural areas is 74 percent of 14 per hundred, the rate for large cities. These rates for rural areas conform with the hospitalization rates for selected rural and







small town areas shown in Table 3. This Table shows rates ranging from 5.7 per hundred in certain Missouri counties to 15.5 per hundred in certain Michigan counties in purely rural areas and continuing up to 17.2 per hundred if towns and villages are also taken into account.

(10) Table 5 - Hospitalization in urban and rural areas — based on data for 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31.

	All Communities	Cities of 100,000 or over	Cities 5,000- 100,000	Towns under 5,000	Rural Areas
Hospital cases per 1,000 canvassed population	61.1	71.1	67.1	51.4	42.5
Percentage of all reported illnesses that were hospitalized	7.1	8.8	7.4	5.5	5.4
Percentage of disabling illnesses that were hospitalized	11.5	14.0	11.7	9.0	9.0

#### Smallpox and Diphtheria Immunizations

In the field of preventive medical care the most generally used services are smallpox vaccinations and diphtheria immunizations. Figure 6 and Table 6 show a comparison of smallpox vaccination rates for different age groups in rural areas and cities of different sizes. Figure 6 includes smallpox cases as well as vaccinations in its data, but Table 6 takes into account vaccinations only. The vaccination rate for rural areas is markedly lower than that for any other group and less than half of that for cities over 100,000 in population. Conversely the lower half of Figure 6 shows the case rate for

(11) Table 6 - History of smallpox vaccinations among persons in cities of various sizes and in rural areas — canvassed white families in 18 States.<sup>1/</sup>

Age in Years	Percentage of persons with a history of vaccination at any time				Total number of persons considered			
	Cities of 100,000 or over	Cities 5,000- 100,000	Towns under 5,000	Rural Areas	Cities of 100,000 or over	Cities 5,000- 100,000	Towns under 5,000	Rural Areas
All ages	71.5	50.5	45.0	34.2	14,089	9,531	7,442	6,797
Under 2	8.1	3.5	6.0	1.9	677	537	331	263
2 - 3	18.9	9.1	10.3	5.8	747	584	448	347
4 - 5	36.7	22.4	15.3	11.5	758	639	503	404
6 - 7	74.6	48.6	35.9	25.5	838	586	523	381
8 - 9	80.9	56.7	42.7	33.0	772	589	424	426
10 - 14	84.0	64.0	50.5	41.6	1,577	1,105	907	976
15 - 19	84.9	64.2	56.4	42.0	1,035	757	568	681
20 - 24	85.6	60.2	57.3	40.0	863	504	360	383
25 - 34	80.5	55.9	57.8	43.6	2,362	1,428	1,094	742
35 - 44	79.9	61.5	54.8	39.5	2,305	1,509	1,134	979
45 - 54	80.9	59.4	50.5	38.9	1,248	803	629	673
55 and over	72.9	56.8	56.0	36.6	907	490	521	542

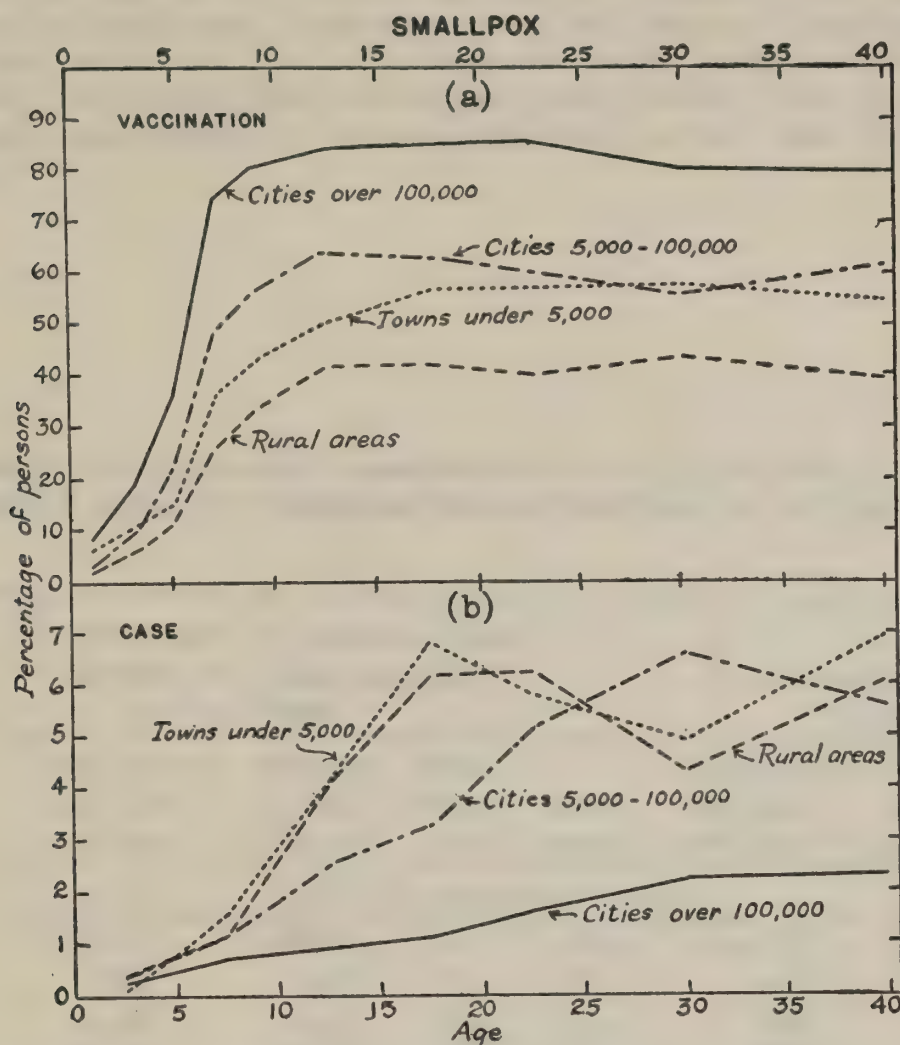
<sup>1/</sup> Dates of interviews varied from 1928 to 1931. Data refer to histories at the beginning of the 12 month morbidity study.





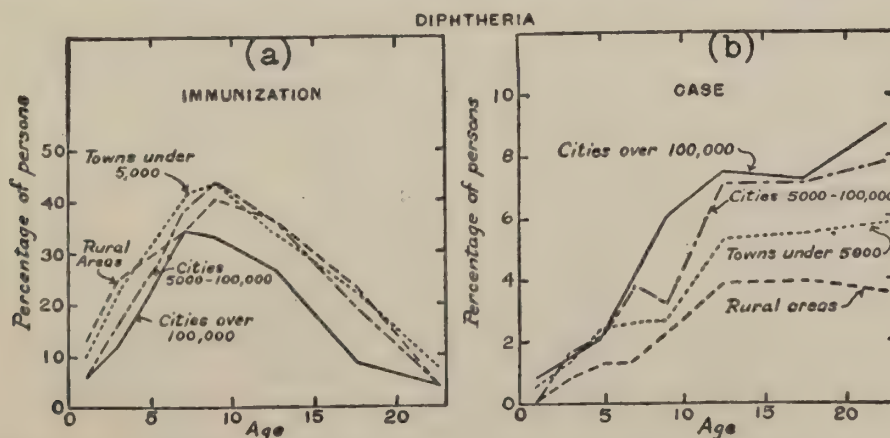


smallpox in rural areas to be high. The rural rate and the rate for towns under 5,000 in population are considerably higher, especially for the younger age groups, than the rates for medium sized and large cities.



(12) Figure 6. - Percentage of persons of specific ages in cities and rural areas (a) who had been vaccinated and (b) who had suffered an attack of smallpox - 8,758 canvassed white families in 18 States, 1928-31.

The rates for diphtheria immunizations present an interesting variation from the very consistent picture of increase in volume of medical care following increase in size of city which has characterized our study this far. Table 7 shows the rate for diphtheria immunizations in rural areas of 19 per hundred to be exceeded only by the rate of 20 per hundred for towns under 5,000 in population. The rate for medium sized cities, 16 per hundred, stands next and the rate for large cities, 12 per hundred, holds the place held most often by the rate for rural groups for other types of service. The variation in rates



(13) Figure 7. - Percentage of persons of specific ages in cities and rural areas (a) who had been immunized and (b) who had suffered an attack of diphtheria - 7,048 canvassed white families in 17 States, 1928-31 (New York excluded).







for different age groups is shown in Figure 7 and Table 7. City groups move ahead of rural groups in the school age groups but otherwise rural groups very nicely hold their own. The right half of Figure 7 indicates the reward rural areas are receiving for their comparatively large use of diphtheria immunizations in the lowest diphtheria case rate shown. For cities also the diphtheria case rate shows an inverse relation to the rate for diphtheria immunizations.

(14) Table 7 - History of diphtheria immunizations among persons in cities of various sizes and in rural areas — canvassed white families in 18 States. <sup>1/</sup>

Age in years	Percentage of persons with history of immunization at any time				Total number of persons considered			
	Cities of 100,000 or over	Cities 5,000-100,000	Towns under 5000	Rural areas	Cities of 100,000 or over	Cities 5,000-100,000	Towns under 5000	Rural areas
All 18 surveyed States								
All ages	12.1	16.1	19.8	18.9	14,087	9,518	7,441	6,781
Under 2	7.9	8.8	12.4	12.1	677	537	331	263
2 - 3	14.8	20.9	28.1	29.4	748	584	448	347
4 - 5	26.8	28.5	37.0	33.6	758	639	503	402
6 - 7	36.2	39.6	44.5	41.1	838	586	524	380
8 - 9	34.8	44.5	49.7	48.3	772	589	424	425
10 - 14	29.2	37.4	42.7	41.0	1,577	1,104	908	976
15 - 19	10.5	20.1	25.4	24.0	1,035	757	569	680
20 - 24	4.7	4.4	7.0	6.3	863	502	360	383
25 - 44	2.7	3.1	4.8	2.8	4,666	2,931	2,226	1,716
45 and over	1.6	.6	1.4	1.3	2,153	1,289	1,148	1,209

<sup>1/</sup> Dates of interviews varied from 1928 to 1931. Data refer to histories at the beginning of the 12 month morbidity study.





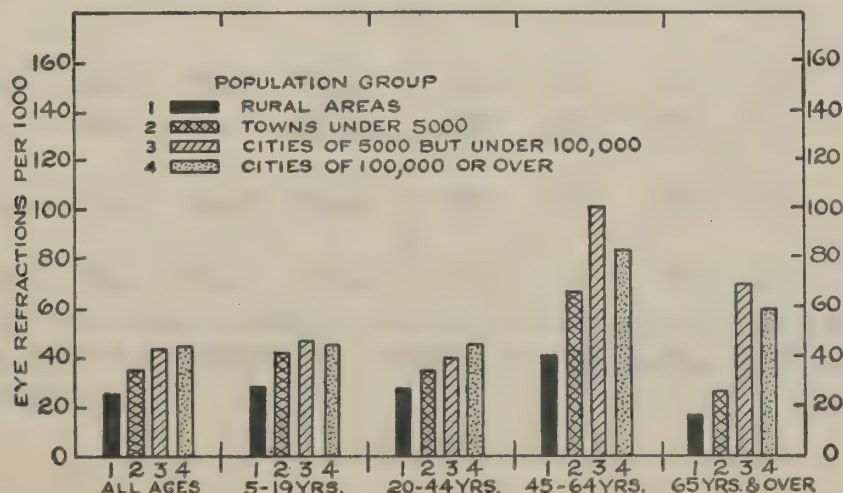
# Eye Refractions

Table 8 and Figure 8 show refraction rates for persons living in cities and towns and in rural unincorporated areas. Considering persons of all ages, and all different age groups except the group under five years of age, the rates for rural areas are consistently the lowest shown, and since in the group under five years of age only one person was found in the rural areas and in towns

(15) Table 8 - Eye refractions per 1,000 persons in urban and rural communities - canvassed white families in 18 States during 12 consecutive months, 1928-31.

Population of city or town	Age						
	All ages						
	All ages	5 years and over	Under 5	5-19	20-44	45-64	65 and over
	Refractions per 1,000 population per year						
Cities of 100,000 or over	44.9	51.1	4.58	45.8	44.4	83.6	59.3
Cities of 5,000 but under 100,000	44.2	51.9	3.26	47.3	39.7	100.7	69.9
Towns under 5,000	36.0	42.2	.88	41.8	35.5	66.3	26.0
Rural areas	25.9	29.2	1.14	28.5	26.1	41.1	16.4
	Number of refractions						
Cities of 100,000 or over	645	629	9	211	246	152	20
Cities of 5,000 but under 100,000	428	422	5	160	137	112	13
Towns under 5,000	273	271	1	112	92	61	6
Rural areas	179	175	1	76	55	40	4
	Population (years of life)						
Cities of 100,000 or over	14,351	12,304	1,963	4,609	5,540	1,818	337
Cities of 5,000 but under 100,000	9,694	8,128	1,535	3,381	3,449	1,112	186
Towns under 5,000	7,585	6,418	1,134	2,678	2,589	920	231
Rural areas	6,914	5,994	881	2,665	2,111	974	244

under 5,000, respectively, these rates can scarcely be considered significant for comparison. The differences between refraction rates for rural and urban groups are most pronounced for the 45- to 64-year age group. Table 9 indicates that when eye refraction rates are studied for occupational groups this comparatively low rate of 41 per thousand for the whole rural 45- to 64-year age group is to some extent accounted for by the extremely low rate of 14.5 per thousand for farmers and farm laborers. This is the only occupational group which shows an actual decrease in the refraction rate with



(16) Figure 8. - Eye refractions per 1,000 persons of specific ages in cities, towns, and rural areas - canvassed white families in 18 States during 12 consecutive months, 1928-31.





advancing age. Farm housewives in this same age group show a rate of 63 per thousand. It is possible that older men can find work on the farm for the performance of which failing eyesight does not offer as great a handicap as it does in other occupations though this does not seem an altogether satisfactory justification for this condition. For other age groups the rates for skilled and unskilled labor are lower than the rates for farmers and farm laborers. The rates for farm housewives are also higher than the rates for skilled and unskilled women workers for the broad 15- to 64-year age group and for the 25- to 44-year age group. With these two exceptions the rates for farm housewives are the lowest shown for the occupational groups among women. They are very much lower than the corresponding rates for town and city housewives.

(17) Table 9 - Eye refractions per 1,000 persons in certain occupations — canvassed white families in 18 States during 12 consecutive months, 1928-31.

Occupation	Refractions per 1,000 population per year				Number of refractions				Population			
	Total 15-64	15-24	25-44	45-64	Total 15-64	15-24	25-44	45-64	Total 15-64	15-24	25-44	45-64
Males												
Professional men	87.6	34.5	55.3	148.9	58	1	22	35	662	29	398	235
Merchants and businessmen	66.1		50.3	94.0	87		38	49	1,316	39	756	521
Clerks and salesmen	42.3	7.6	37.0	86.8	62	2	33	27	1,464	262	891	311
Skilled and unskilled labor	18.8	11.7	16.2	29.7	75	7	39	29	3,984	597	2,412	975
Farmers and farm laborers	19.8	29.0	21.1	14.5	19	4	10	5	958	138	475	345
Females												
Professional women	106.7	64.0	124.6	109.4	51	8	36	7	478	125	289	64
Clerks, saleswomen and merchants	66.2	52.0	93.4	32.3	50	21	27	2	755	404	289	62
Skilled and unskilled labor	27.8	11.9	25.3	71.4	11	2	4	5	396	168	158	70
All housewives <sup>1/</sup>	54.5	18.5	44.2	97.5	430	13	236	181	7,897	701	5,340	1,856
Town or city housewives	57.3	20.8	45.8	106.4	375	12	206	157	6,548	578	4,495	1,475
Farm housewives	40.8	8.1	35.5	63.0	55	1	30	24	1,349	123	845	381

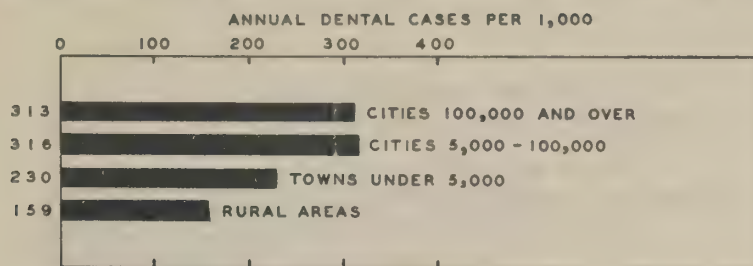
<sup>1/</sup> Housewife here means a person in charge of the home, and therefore includes a few single women.





# Dental Care

A comparison of rural and urban areas on the point of the amount of dental care received presents a picture similar in many respects to that



(18) Figure 9- Frequency of all dental cases in metropolitan, urban and rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population of the registration States in 1930).

which characterizes a like comparison in the field of surgery. Figure 9 and Table 10 show the number of dental cases per thousand persons for all ages, 159, to be about half the 313 cases shown for large cities, a difference which closely compares to the difference in the amount of surgery received by these two types of community. This low rate of dental care persists for rural residents rather uniformly in all age groups.

(19) Table 10 - Frequency of all dental cases <sup>1/</sup> among persons of specific ages in cities of different sizes and in rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31.

Age	Annual dental cases <sup>1/</sup> per 1,000 population				Population (years of life)			
	Cities of 100,000 or over	Cities 5,000- 100,000	Towns under 5,000	Rural areas	Cities of 100,000 or over	Cities 5,000- 100,000	Towns under 5,000	Rural areas
All ages: <sup>2/</sup>								
Adjusted	313	316	230	159				
Crude	307	304	221	155	14,351	9,694	7,585	6,914
Under 5	42	38	42	34	1,963	1,535	1,134	881
5 - 9	334	293	246	168	1,994	1,517	1,199	1,005
10 - 14	372	387	288	193	1,578	1,106	909	975
15 - 19	397	391	293	182	1,037	758	570	685
20 - 24	349	351	287	196	868	505	359	387
25 - 34	377	329	286	248	2,369	1,432	1,096	743
35 - 44	363	352	254	183	2,303	1,512	1,134	981
45 - 64	298	430	192	113	1,818	1,112	920	974
65 and over	125	280	95	16	337	186	231	244
Number of cases (all ages)					4,411	2,950	1,680	1,075

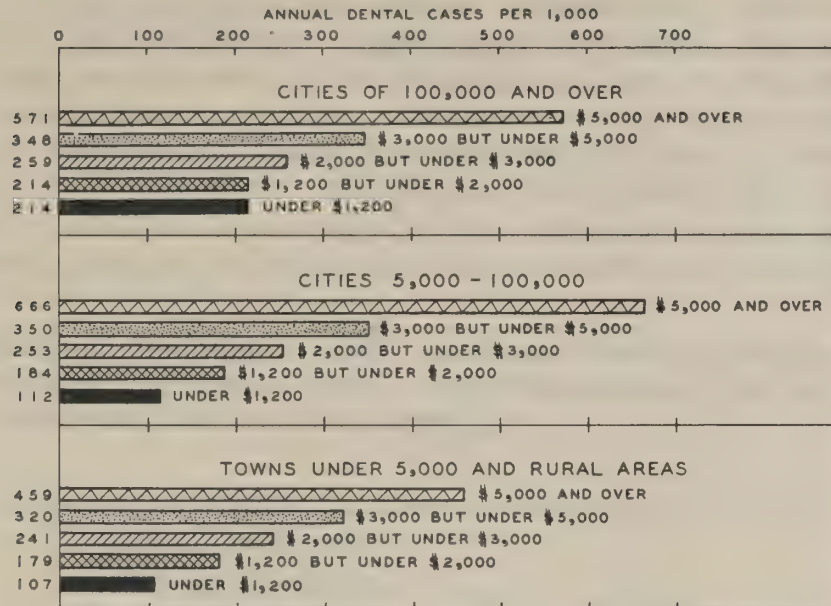
<sup>1/</sup> A dental case is a series of one or more consecutive visits to a dentist in connection with one or more types of service.

<sup>2/</sup> "All ages" includes a few of unknown age.



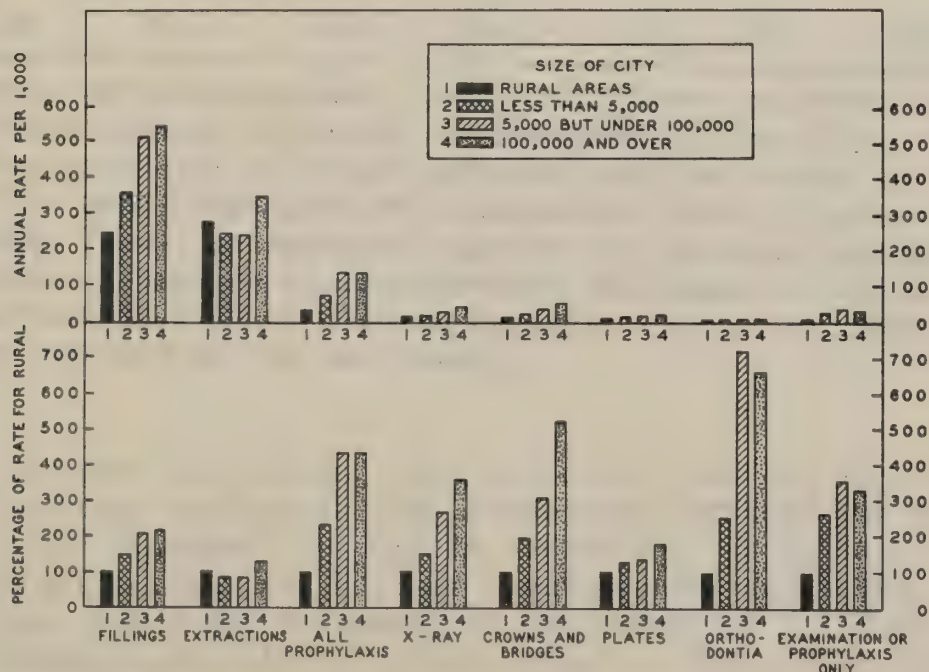


The variation according to income, as shown by Figure 10, indicates the low income rural resident is even more restricted in the amount of dental care available for him as compared with rural residents of higher income groups than he is in the field of surgery. For surgery among rural and small town



(20) Figure 10- Frequency of all dental cases among persons classified according to total annual family income in metropolitan, urban and rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population of the registration States in 1930).

residents, the lowest income group (under \$1,200) received about three-fourths as much care as the highest income group (\$5,000 and over), but for dental care this low income group receives only about one-fourth the care of the highest income group. Between these two groups volume of dental care increases regularly with increase in income.



(21) Figure 11- Frequency of certain dental services in metropolitan, urban and rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population of the registration States in 1930).





As may be seen from Figure 11 and Table 11 the variation in rates of dental care for rural and urban residents in point of the kinds of service received is much the same as the variation in the rates for the different kinds of surgical operations. The rural rate for extractions is exceeded only by rates for large cities with which it bears the ratio of 4 to 5. Extractions are, of course, the service of extremity. Having failed to secure the dental care necessary to preserve his teeth, the rural resident is compelled in the end to resort to extraction. As a counterpart to this comparatively high extraction rate, the rate for dental plates for rural areas is the next high point among the different types of service. It is significant, however, that this rate does not approach the corresponding rate for towns and cities as closely as the rate for extractions does, suggesting the probability of a larger number of unreplaced extractions than

(22) Table 11 - Frequency of certain dental services <sup>a/</sup>among persons living in cities of different sizes and in rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months 1928-31.

Nature of Service	Annual rate per 1000 population (age adjusted)				Total number of services			
	Cities 100,000 or over	Cities 5,000-100,000	Towns under 5,000	Rural areas	Cities 100,000 or over	Cities 5,000-100,000	Towns under 5,000	Rural areas
Fillings	544.3	512.9	358.5	249.4	7,715	4,822	2,613	1,701
Extractions	349.2	241.0	242.7	275.3	4,864	2,182	1,721	1,758
All prophylaxis	137.4	137.4	73.6	31.8	1,896	1,248	521	212
Crowns and bridges	54.8	32.3	20.5	10.5	732	270	133	61
Plates	15.5	11.8	11.4	8.8	180	84	66	48
X-ray	38.7	29.1	16.3	10.9	514	246	107	65
Orthodontia	7.8	8.5	3.0	1.2	117	90	25	10
Examination and prophylaxis only	30.3	32.9	24.4	9.2	436	319	185	66

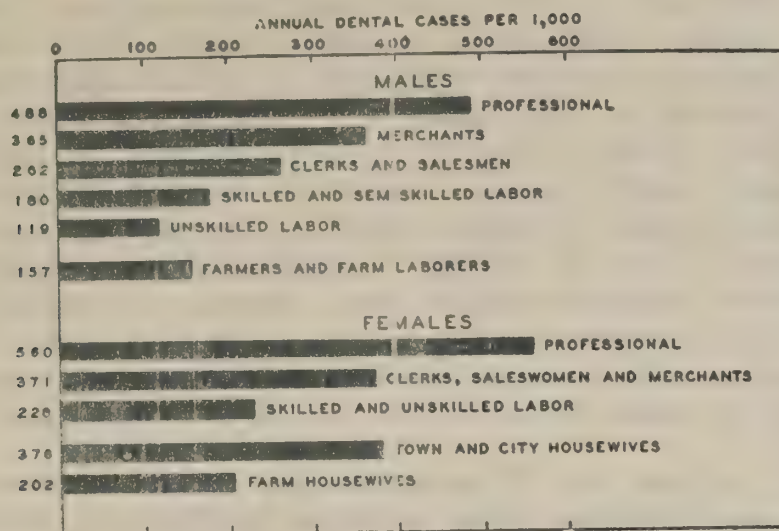
<sup>a/</sup> Dental services, as distinguished from dental cases, refer to specific kinds of dental service such as fillings, extractions and the like. For fillings and extractions each cavity filled and each tooth extracted is considered a service. This exact quantitative calculation cannot, however, be followed for prophylaxis, X-ray, orthodontia, plates and bridges, and for these services the volume of service is expressed as the number of dental cases which involved a particular kind of service regardless of other services which may have been included in the same case.

will be found in towns and cities. The difference between the rates for rural areas and cities is largest for orthodontia services for which the rural rate (1.2 per thousand) is only 15 percent of the rates for medium sized and large cities (8.5 and 7.8 per thousand, respectively). The rural rate for fillings, 249.4 per thousand, is 49 percent of 512.9 per thousand, the rate for medium sized cities, and 46 percent of 544.3 per thousand, the rate for large cities.





As may be seen from Figure 12, among men, only unskilled workers have lower rates of dental service than farmers and farm laborers, and among women, farm housewives have the lowest rate found.



(23) Figure 12. - Frequency of all dental cases among males and females 15-64 years of age engaged in different classes of occupations-8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population 15-64 years of age in the registration States in 1930.)

### Expenditures for Medical Care

Having reviewed the amount of medical care received by farmers and rural residents as compared with that received by residents in cities, it is of interest to note what these different groups pay for this care. Table 12

(24) Table 12 - Average annual expense for medical care and per cent of medical expense to total expense among urban white families, 1935-1936.

Family income class	Six large cities		Middle-Sized Cities		Small Cities <sup>a/</sup>	
	Amount	Per cent	Amount	Per cent	Amount	Per cent
\$ 250 - \$ 499	—	—	\$ 41	6.3	\$31	5.2
500 - 749	\$ 38	4.9	31	4.3	34	4.2
750 - 999	39	4.2	43	4.7	40	4.4
1,000 - 1,249	51	4.4	53	4.7	52	4.6
1,250 - 1,499	66	4.9	67	5.0	70	5.2
1,500 - 1,749	78	5.0	81	5.3	81	5.2
1,750 - 1,999	85	4.9	96	5.4	79	4.5
2,000 - 2,249	96	4.9	98	5.1	104	5.4
2,250 - 2,499	112	5.3	95	4.7	124	5.8
2,500 - 2,999	122	5.2	97	4.1	114	4.8
3,000 - 3,499	132	4.9	127	4.7	154	5.2
3,500 - 3,999	170	5.5	153	5.1	—	—
4,000 - 4,999	186	5.4	147	4.4	—	—
5,000 - 7,499	243	5.4	182	3.8	—	—
7,500 - 9,999	387	5.2	—	—	—	—

<sup>a/</sup> In New England and East Central States.





undertakes to show the amounts spent for medical care by different income groups in small, medium sized and large cities, and Table 13 gives the same information for white farm operators in selected areas. A significant point brought out by these tables is the very uniform relationship which cost of medical care bears to income. The proportion of income used for medical care, regardless of size of income, is consistently from 4 to 7 percent with only a few examples outside of these limits. While farm operators' income covers only cash income and so is not exactly comparable to the same income for city residents, a comparison of Tables 12 and 13 seems to indicate that their expenditures for medical care compare rather favorably with the expenditures of urban residents of the same income group, this notwithstanding the consistently low amount of medical care of all sorts received by rural residents as compared with urban residents as shown by previous tables.

(25) Table 13 - Average annual expenditures <sup>a/</sup> for medical care and percent of expenditures for medical care to total expenditures <sup>b/</sup> among families of white farm operators in selected States, 1935-1936.

Income	Pennsylvania and Ohio		Kansas and North Dakota		Oregon	
	Amount	Per cent	Amount	Per cent	Amount	Per cent
\$ 0 - \$ 249	\$ 33.14	5.4	\$ 48.60	7.6	\$ 25.53	7.4
250 - 499	33.60	8.4	47.05	8.6	21.52	6.5
500 - 749	29.48	7.1	62.09	9.6	37.37	8.5
750 - 999	32.32	6.6	59.53	8.3	53.14	9.6
1,000 - 1,249	45.09	7.7	56.14	7.1	42.02	6.7
1,250 - 1,499	46.76	6.8	71.03	8.4	59.95	8.2
1,500 - 1,749	45.82	6.0	69.32	7.6	71.41	7.8
1,750 - 1,999	58.48	7.0	91.51	8.6	73.72	7.4
2,000 - 2,499	56.57	6.2	79.76	6.3	90.93	8.7
2,500 - 2,999	73.81	7.1	154.61	12.7	87.43	7.0
3,000 - 3,999	67.25	6.1	100.56	6.2	143.72	12.0
4,000 - 4,999	73.27	5.3	—	—	63.43	5.1
5,000 - 9,999	81.95	6.4	—	—	—	—

<sup>a/</sup> Includes expenditures for health and accident insurance.

<sup>b/</sup> Total expenditures do not include value of food raised on farm or other goods and services received without direct money expense.

#### Summary

In general, volume of medical care decreases with size of city and residents in rural areas receive less care than residents in cities of any size. A similar reduction in volume of medical care is noted with decrease in size of income. The low income rural resident is, therefore, subjected to forces from two directions, cutting down the amount of medical care available for him. This situation prevails in the field of general practitioner care, surgery, hospital care, eye refractions, smallpox vaccinations and dental care. Only for diphtheria immunizations do rates for rural folk seem





to measure up to rates for urban residents. In the field of surgery the differences are not so marked for the more emergency types of surgery such as bone-sets, appendectomies, etc. In the field of dental care the rates for tooth extractions among rural residents compare favorably with those for city residents and the same is true to a less degree with reference to the rates for fitting dental plates. Notwithstanding this reduced amount of medical care received by rural residents, available data do not indicate that expenditures of these rural folk for medical care as compared with income are markedly different from those of urban residents.

#### Notes

Tables and charts used in this paper have been collected from sources indicated in the following list:

- (1) Table 1 - Services of physicians and other practitioners in connection with illness in cities of different sizes - 7,434 canvassed white families in 14 States, 1928-31. Collins, Selwyn D: The frequency and volume of doctors' calls in connection with illnesses among 9,000 canvassed families. Public Health Report in press. Table 2.
- (2) Table 2 - Percentage of disabling illnesses receiving doctors' care, by economic status and size of city. Urban, white. Britten, Rollo H: Receipt of medical services in different urban population groups (Not yet published) - Table 8.
- (3) Table 3 - Percentage of disabling illnesses (a) receiving various types of medical care. Rural, White. Same source as Table 2 - A footnote table.
- (4) Figure 1 - Frequency of all surgical operations in cities of different sizes and in rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population of the registration states in 1930.) Collins, Selwyn D.: Frequency of surgical procedures among 9,000 families, based on nation-wide periodic canvasses, 1928-31. Public Health Report, 53: 587-628 (April 22, 1938) Figure 11 on Page 608.
- (5) Figure 2 - Frequency of all surgical operations among persons of specific ages in large cities and in rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. Same source as Figure 1 - Figure 12 on Page 608.
- (6) Figure 3 - Frequency of all surgical operations in cities of different sizes among persons classified according to total annual family income - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population of the registration States in 1930). Same source as Figure 1 - Figure 13 on Page 609.







- (7) Figure 4 - Frequency of all surgical operations among males 15-64 years of age engaged in different classes of occupations - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population 15-64 years of age in the registration States in 1930). Same source as Figure 1 - Part of Figure 7 on Page 602.
- (8) Figure 5 - Frequency of certain surgical operations in cities of different sizes and in rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population of the registration States in 1930). Same source as Figure 1 - Figure 13 on Page 609.
- (9) Table 4 - Frequency of certain surgical operations among canvassed white families of different annual incomes in metropolitan, urban and rural parts of 18 States during 12 consecutive months, 1928-31. Same source as Figure 1 - Part of Table 15 on Page 614.
- (10) Table 5 - Hospitalization in urban and rural areas - based on data for 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. - Unpublished data from a survey of 9,000 families by the United States Public Health Service and The Committee on the Cost of Medical Care.
- (11) Table 6 - History of smallpox vaccinations among persons in cities of various sizes and in rural areas - canvassed white families in 18 States. Collins, Selwyn D.: History and frequency of smallpox vaccinations and cases in 9,000 families. Public Health Report, 51: 443-479 (April 17, 1936). Part of Table 2 on Page 448.
- (12) Figure 6 - Percentage of persons of specific ages in cities and rural areas (a) who had been vaccinated and (b) who had suffered an attack of smallpox - 8,758 canvassed white families in 18 States, 1928-31. Same source as Table 6 - Figure 3 on Page 452.
- (13) Figure 7 - Percentage of persons of specific ages in cities and rural areas (a) who had been immunized and (b) who had suffered an attack of diphtheria - 7,048 canvassed white families in 17 States, 1928-31 (New York excluded). Collins, Selwyn D.: History and frequency of diphtheria immunizations and cases in 9,000 families, Public Health Report, 51: 1736-1773 (Dec. 18, 1936), Figure 4 on Page 1747.
- (14) Table 7 - History of diphtheria immunizations among persons in cities of various sizes and in rural areas - canvassed white families in 18 States. Same source as Figure 7 - Part of Table 7 on Page 1746.
- (15) Table 8 - Eye refractions per 1,000 persons in urban and rural communities - canvassed white families in 18 States during 12 consecutive months, 1928-31. Collins, Selwyn D.: Frequency of eye refractions in 9,000 families, based on nation-wide periodic canvasses 1938-1931, Public Health Report, 49: 649-666 (June 1, 1934), Table 5 on Page 659.
- (16) Figure 8 - Eye refractions per 1,000 persons of specific ages in cities, towns and rural areas - canvassed white families in 18 States during 12 consecutive months, 1928-31. Same source as Table 8 - Figure 5 on Page 658.







- (17) Table 9 - Eye refractions per 1,000 persons in certain occupations - canvassed white families in 18 States during 12 consecutive months, 1928-31. Same source as Table 8 - Table 4 on Page 658.
- (18) Figure 9 - Frequency of all dental cases in metropolitan, urban and rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population of the registration States in 1930). Collins, Selwyn D.: Frequency of dental services among 9,000 families, based on nation-wide periodic canvasses, 1928-31. Public Health Report, 54: 629-657 (April 21, 1939) - Unpublished chart based on Table 10, Page 648.
- (19) Table 10 - Frequency of all dental cases among persons of specific ages in cities of different sizes and in rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months 1928-31. Same source as Figure 9 - Table 10 on Page 648.
- (20) Figure 10 - Frequency of all dental cases among persons classified according to total annual family income in metropolitan, urban and rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population of the registration States in 1930). Same source as Figure 9 - Unpublished chart based on Table 8, Page 643.
- (21) Figure 11 - Frequency of certain dental services in metropolitan, urban and rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population of the registration States in 1930). Same source as Figure 9 - Unpublished chart based on Table 11, Page 650.
- (22) Table 11 - Frequency of certain dental services among persons living in cities of different sizes and in rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. Same source as Figure 9. Rearrangement of part of Table 11, Page 650.
- (23) Figure 12 - Frequency of all dental cases among males and females 15-64 years of age engaged in different classes of occupations - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population 15-64 years of age in the registration States in 1930). Same source as Figure 9 - Figure 5 on Page 640.
- (24) Table 12 - Average annual expense for medical care and per cent of medical expense to total expense among urban white families, 1935-1936. Family Expenditures in 32 Cities, Urban Study of Consumer Purchases, Bureau of Labor Statistics, U. S. Department of Labor.
- (25) Table 13 - Average annual expenditures for medical care and percent of expenditures for medical care to total expenditures among families of white farm operators in selected States, 1935-1936. Unpublished data from the Rural Study of Consumer Purchases, a WPA project conducted by the Division of Home Economics, Bureau of Agricultural Economics, U. S. Department of Agriculture.



(17) Table 9 - Frequency of all dental cases among persons of specified ages in cities of different sizes and in rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population of the registration States in 1930). Same source as Table 8 - Table 4 on page 638.

(18) Figure 9 - Frequency of all dental cases in metropolitan, urban and rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population of the registration States in 1930). Collins, Selwyn D., Frequency of dental services among 9,000 families, based on nation-wide periodic canvasses, 1928-31. Public Health Report, No. 559-562 (April 21, 1932) - Unpublished chart based on Table 10, page 648.

(19) Table 10 - Frequency of all dental cases among persons of specified ages in cities of different sizes and in rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. Same source as Figure 9 - Table 10 on page 648.

(20) Figure 10 - Frequency of all dental cases among persons classified according to total annual family income in metropolitan, urban and rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population of the registration States in 1930). Same source as Figure 9 - Unpublished chart based on Table 8, page 647.

(21) Figure 11 - Frequency of certain dental services in metropolitan, urban and rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population of the registration States in 1930). Same source as Figure 9 - Unpublished chart based on Table 11, page 650.

(22) Table 11 - Frequency of certain dental services among persons living in cities of different sizes and in rural areas - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. Same source as Figure 9 - Restratement of part of Table 11, page 650.

(23) Figure 12 - Frequency of all dental cases among males and females 15-64 years of age engaged in different classes of occupations - 8,758 canvassed white families in 18 States during 12 consecutive months, 1928-31. (Rates adjusted to the age distribution of the white population 15-64 years of age in the registration States in 1930). Same source as Figure 9 - Figure 5 on page 640.

(24) Table 13 - Average annual expenditure for medical care and part cost of medical expense to total expenses among urban white families, 1935-1936. Family Income Survey in 32 Cities, Urban Study of Consumer Purchases, Bureau of Labor Statistics, U. S. Department of Labor.

(25) Table 13 - Average annual expenditures for medical care and part of expenditures for medical care to total expenditures among families of white farm operators in selected States, 1935-1936. Unpublished data from the Rural Study of Consumer Purchases, a WPA project conducted by the Division of Home Economics, Bureau of Agricultural Economics, U. S. Department of Agriculture.